Empowered by Innovation NEC

NEC Express5800/R120d-2E Configuration Guide

Standard model

Introduction

This document contains product and configuration information that will enable you to configure your system. The guide will ensure fast and proper configuration of your NEC Express5800 server.

December 21, 2012
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NEC Corporation

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Technical Specification

Key Features

- High performance with the latest Intel® Xeon® processor E5-2400 product family
- Up to 384 GB of memory capacity, supporting high speed and energy efficient DDR3-1600 memory
- Up to sixteen 2.5-inch hard drives
- High energy efficiency with power capping feature and 80 PLUS® Platinum power supply
- Full manageability by integrated EXPRESSSCOPE Engine 3

Specification

(1/2)

Model		R120d-2E			
Part Number		N8100-1950F, N8100-1951F			
Processor	**Type**	Intel® Xeon® processor E5-2403	Intel® Xeon® processor E5-2407	Intel® Xeon® processor E5-2420	Intel® Xeon® processor E5-2430
	Clock speed	1.80 GHz	2.20 GHz	1.90 GHz	2.20 GHz
	Number of Processors	1 to 2			
	Cache	10 MB	10 MB	15 MB	15 MB
	Cores and Threads	4C-4T	4C-4T	6C-12T	6C-12T
Chipset		Intel® C602 Chipset			
Memory	**Type**	DDR3-1333 ECC Unbuffered Low Power DIMM, DDR3-1600 and DDR3-1066 ECC Registered Low Power DIMM			
	Standard Capacity	0 GB			
	Maximum Capacity	384 GB (12 x 32 GB)			
	Memory protection	ECC, x4 SDDC, Memory Mirroring, Memory Lockstep, Memory Sparing			
Internal Storage	**Standard Capacity**	0 GB			
	Maximum Capacity	SAS HDD : 14.4 TB (16 x 900 GB) SATA HDD : 16 TB (16 x 1 TB) SAS SSD : 6.4 TB (16 x 400 GB)			
	Disk Controller	SATA : 3Gb/s and 6Gb/s (Integrated) SAS: 6Gb/s (Optional)			
	RAID	SATA : RAID 0/1/10(Standard), RAID 5/6/50/60 (Optional) SAS : RAID 0/1/5/6/10/50/60 (Optional)			
	Hot Plug	Supported			
	Optical Disk Drive	Optional			
	Optical Drive Bays	1			
	3.5-inch Media Bays	1			
	Disk Drive Bays	16			
Expansion Slots	**Standard**	Total: 6 slots available 1 PCIe 3.0 x8 (x8 connector) 2 PCIe 3.0 x4 (x8 connector) 1 PCIe 2.0 x4 (x8 connector) 1 PCIe 2.0 x1 (x4 connector) 1 PCIe 3.0 x8 (x8 connector) dedicated RAID slot			
Video	**Controller (VRAM)**	Integrated in Server Management Controller (32MB)			
	Resolution / Color	1280 x 1024 / 16.7M [1]			
Interfaces		2 x VGA (15-pin mini D-sub, 1 x front, 1 x rear) 9 x USB2.0 (2 x front, 4 x rear, 3 x internal) 1 to 2 x Serial (9-pin mini D-sub, RS232-C, 1 to 2 x rear) 4 x 1000BASE-T LAN connector (RJ-45, 4 x rear) 1 x Management LAN connector (RJ-45, 1 x rear)			

Model		**R120d-2E**			
Server Management		EXPRESSSCOPE Engine 3			
Redundant Fan		Optional, hot plug			
Redundant Power Supply		Optional, hot plug			
Power Supply		1 to 2 x 450 Watt or 800 Watt 80 PLUS® Platinum certified hot plug PSU 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz			
Power Consumption	**(Max. Config, Idling)**	265 VA / 261 Watt	264 VA / 259 Watt	273VA / 267 Watt	273VA / 267 Watt
	(Max. Config, Operating)	620 VA / 610 Watt	644 VA / 633 Watt	693 VA / 681 Watt	696 VA / 684 Watt
Acoustical Noise (Sound Pressure Level) [2]	**Max. Config, Idling**	43.3dB			
	Max. Config, Operating	50.2dB			
Dimensions (W x D x H)		448.4 x 696.3 x 87.4 mm / 17.6 x 27.4 x 3.4 in (2U)			
Weight (Minimum / Maximum)		18 kg / 29 kg, 39.68 lbs. / 63.93 lbs.			
Temperature, Relative Humidity (non-condensing)		Operating: 10° to 40° C [3] / 50° to 104° F [3], 20 to 80% Non-Operating: -10° to 55° C / 14° to 131° F, 20 to 80%			
Regulatory and Safety		FCC, C-TICK, CE, UL, CB, KC, BSMI, CCC, RoHS, WEEE			
Operating Systems		Microsoft® Windows Server® 2003 R2, Standard Edition Microsoft® Windows Server® 2003 R2, Enterprise Edition Microsoft® Windows Server® 2003 R2, Standard x64 Edition Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Microsoft® Windows Server® 2008 Standard Microsoft® Windows Server® 2008 Enterprise Microsoft® Windows Server® 2008 Standard (x64) Microsoft® Windows Server® 2008 Enterprise (x64) Microsoft® Windows Server® 2008 R2 Standard Microsoft® Windows Server® 2008 R2 Enterprise Microsoft® Windows Server® 2012 Standard [4] Microsoft® Windows Server® 2012 Datacenter [4] Red Hat Enterprise Linux 5.7 or later (x86) [5] Red Hat Enterprise Linux 5.7 or later (EM64T) [5] Red Hat Enterprise Linux 6.1 or later (x86) [5] Red Hat Enterprise Linux 6.1 or later (x86_64) [5] VMware ESX 4.1Update 2 VMware ESXi 5.0 Update 1 VMware ESXi 5.1			

1 Maximum resolution available via EXPRESSSCOPE Engine 3 remote console is 1280 x 1024 / 65K colors.

2 Noise emission was measured in accordance with ISO 7779. The actual value may vary by the operating environment.

3 Operable up to 35°C (95°F) when 3 or more BBUs are installed.

4 For Windows Server 2012 installation, download the driver kit from the following website and install it after OS installation
http://www.nec.com/en/global/prod/express/download/

5 For Linux support, contact our sales representative or go to the NEC website at:
http://www.nec.com/global/prod/express/linux/index.html

(2/2)

Model		R120d-2E		
Part Number		N8100-1950F, N8100-1951F		
Processor	**Type**	Intel® Xeon® processor E5-2430L	Intel® Xeon® processor E5-2450	Intel® Xeon® processor E5-2470
	Clock speed	2 GHz	2.10 GHz	2.30 GHz
	Number of Processors	1 to 2		
	Cache	15 MB	20 MB	20 MB
	Cores and Threads	6C-12T	8C-16T	8C-16T
Chipset		Intel® C602 Chipset		
Memory	**Type**	DDR3-1333 ECC Unbuffered Low Power DIMM, DDR3-1600 and DDR3-1066 ECC Registered Low Power DIMM		
	Standard Capacity	0 GB		
	Maximum Capacity	384 GB (12 x 32 GB)		
	Memory protection	ECC, x4 SDDC, Memory Mirroring, Memory Lockstep, Memory Sparing		
Internal Storage	**Standard Capacity**	0 GB		
	Maximum Capacity	SAS HDD : 14.4 TB (16 x 900 GB) SATA HDD : 16 TB (16 x 1 TB) SAS SSD : 6.4 TB (16 x 400 GB)		
	Disk Controller	SATA : 3Gb/s and 6Gb/s (Integrated) SAS: 6Gb/s (Optional)		
	RAID	SATA : RAID 0/1/10(Standard), RAID 5/6/50/60 (Optional) SAS : RAID 0/1/5/6/10/50/60 (Optional)		
	Hot Plug	Supported		
	Optical Disk Drive	Optional		
	Optical Drive Bays	1		
	3.5-inch Media Bays	1		
	Disk Drive Bays	16		
Expansion Slots	**Standard**	Total: 6 slots available 1 PCIe 3.0 x8 (x8 connector) 2 PCIe 3.0 x4 (x8 connector) 1 PCIe 2.0 x4 (x8 connector) 1 PCIe 2.0 x1 (x4 connector) 1 PCIe 3.0 x8 (x8 connector) dedicated RAID slot		
Video	**Controller (VRAM)**	Integrated in Server Management Controller (32MB)		
	Resolution / Color	1280 x 1024 / 16.7M [1]		
Interfaces		2 x VGA (15-pin mini D-sub, 1 x front, 1 x rear) 9 x USB2.0 (2 x front, 4 x rear, 3 x internal) 1 to 2 x Serial (9-pin mini D-sub, RS232-C, 1 to 2 x rear) 4 x 1000BASE-T LAN connector (RJ-45, 4 x rear) 1 x Management LAN connector (RJ-45, 1 x rear)		
Server Management		EXPRESSSCOPE Engine 3		
Redundant Fan		Optional, hot plug		
Redundant Power Supply		Optional, hot plug		
Power Supply		1 to 2 x 450 Watt or 800 Watt 80 PLUS® Platinum certified hot plug PSU 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz		
Power Consumption	**Max. Config, Idling**	270 VA / 268 Watt	268 VA / 266 Watt	273 VA / 268 Watt
	Max. Config, Operating	676 VA / 664 Watt	782 VA / 769 Watt	782 VA / 770 Watt

Model		**R120d-2E**		
Acoustical Noise (Sound Pressure Level) [2]	**Max. Config, Idling**	43.3dB	43.3dB	43.3dB
	Max. Config, Operating	48.6 dB	50.2dB	50.2dB
Dimensions (W x D x H)		448.4 x 696.3 x 87.4 mm / 17.6 x 27.4 x 3.4 in (2U)		
Weight (Minimum / Maximum)		18 kg / 29 kg, 39.68 lbs. / 63.93 lbs.		
Temperature, Relative Humidity (non-condensing)		Operating: 10° to 40° C [3] / 50° to 104° F [3], 20 to 80% Non-Operating: -10° to 55° C / 14° to 131° F, 20 to 80%		
Regulatory and Safety		FCC, C-TICK, CE, UL, CB, KC, BSMI, CCC, RoHS, WEEE		
Operating Systems		Microsoft® Windows Server® 2003 R2, Standard Edition Microsoft® Windows Server® 2003 R2, Enterprise Edition Microsoft® Windows Server® 2003 R2, Standard x64 Edition Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Microsoft® Windows Server® 2008 Standard Microsoft® Windows Server® 2008 Enterprise Microsoft® Windows Server® 2008 Standard (x64) Microsoft® Windows Server® 2008 Enterprise (x64) Microsoft® Windows Server® 2008 R2 Standard Microsoft® Windows Server® 2008 R2 Enterprise Microsoft® Windows Server® 2012 Standard [4] Microsoft® Windows Server® 2012 Datacenter [4] Red Hat Enterprise Linux 5.7 or later (x86) [5] Red Hat Enterprise Linux 5.7 or later (EM64T) [5] Red Hat Enterprise Linux 6.1 or later (x86) [5] Red Hat Enterprise Linux 6.1 or later (x86_64) [5] VMware ESX 4.1Update 2 VMware ESXi 5.0 Update 1 VMware ESXi 5.1		

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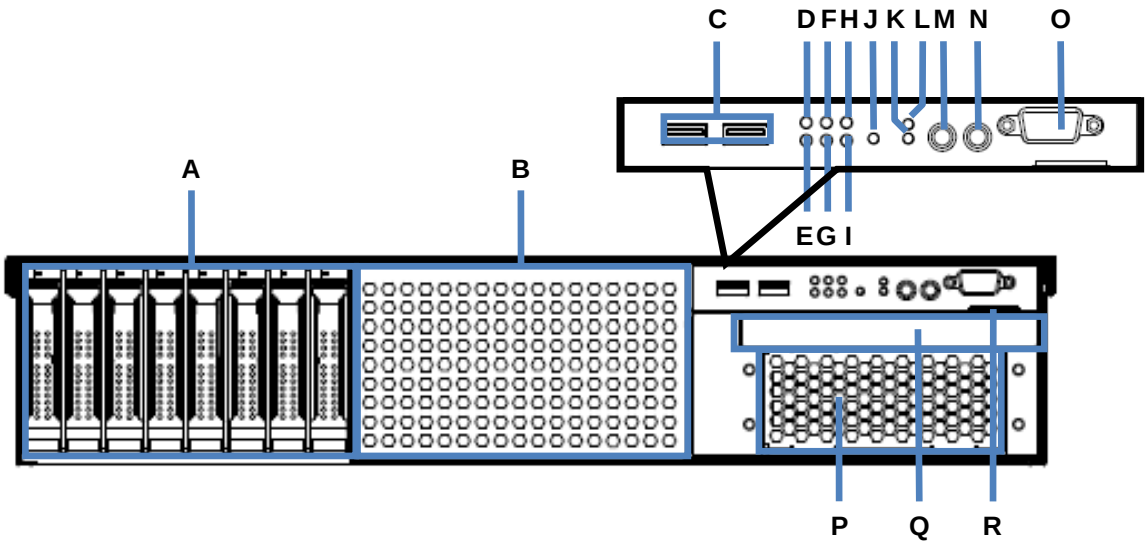
http://www.nec.com/en/global/prod/express/download/

5 For Linux support, contact our sales representative or go to the NEC website at:
http://www.nec.com/global/prod/express/linux/index.html

External Views

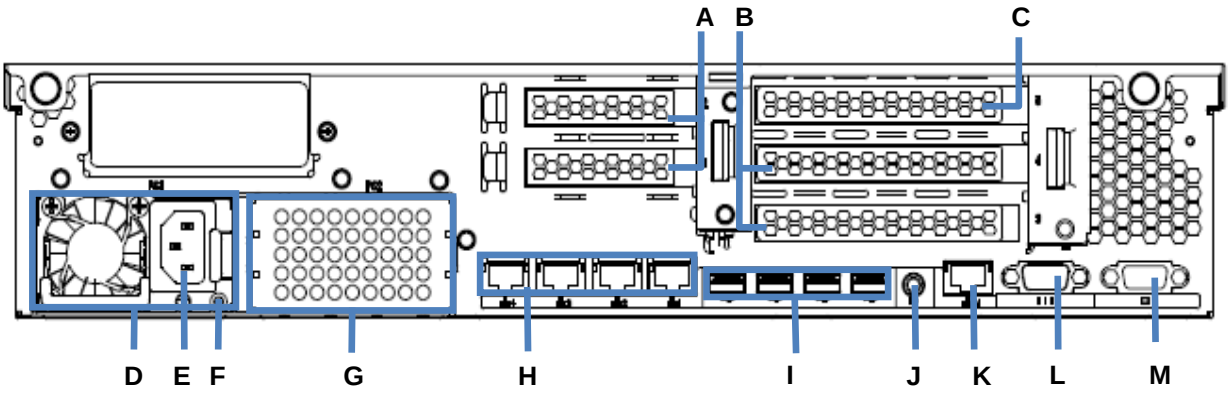
Front and Rear Views

Front View



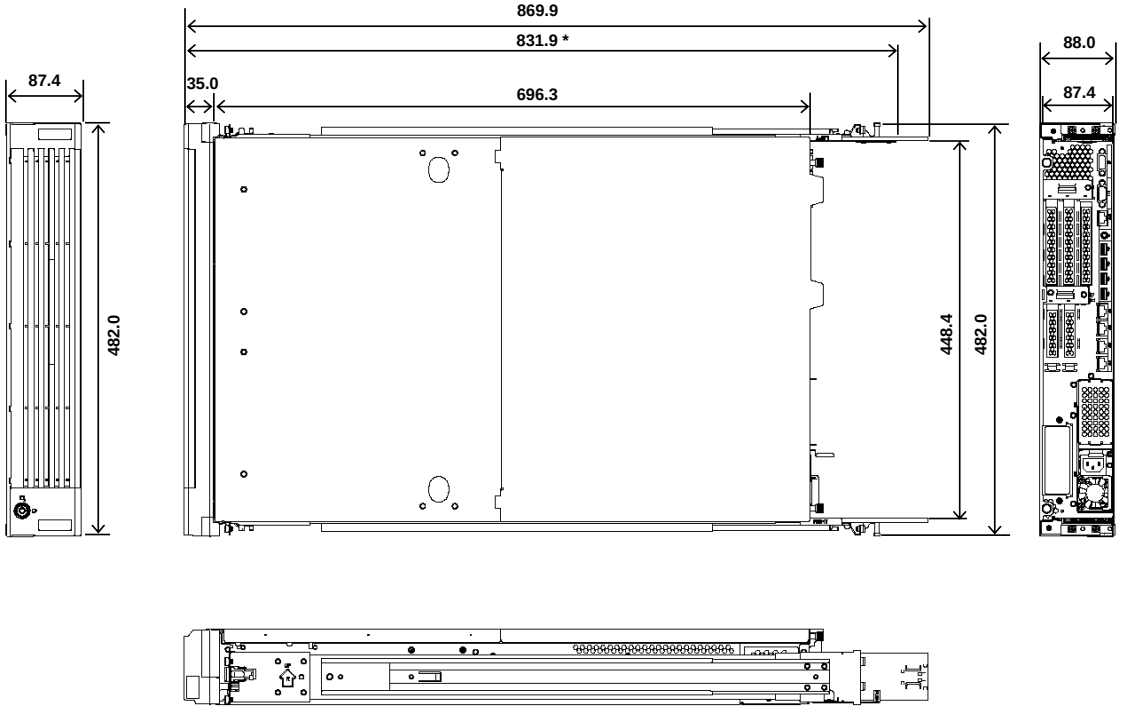
Legend			
A.	2.5-inch Drive Bays	**J.**	BMC Reset Button
B.	2.5-inch Drive Cage Bay	**K.**	Dump (NMI) Button
C.	USB Connectors	**L.**	System Reset Button
D.	Data LAN 1 Activity LED	**M.**	UID LED Button
E.	Data LAN 2 Activity LED	**N.**	Power Button / Power LED
F.	Data LAN 3 Activity LED	**O.**	VGA Connector
G.	Data LAN 4 Activity LED	**P.**	Media Bay
H.	Hard Drive Activity LED	**Q.**	Optical Drive Bay
I.	System Status LED	**R.**	Pull-out Tab

Rear View



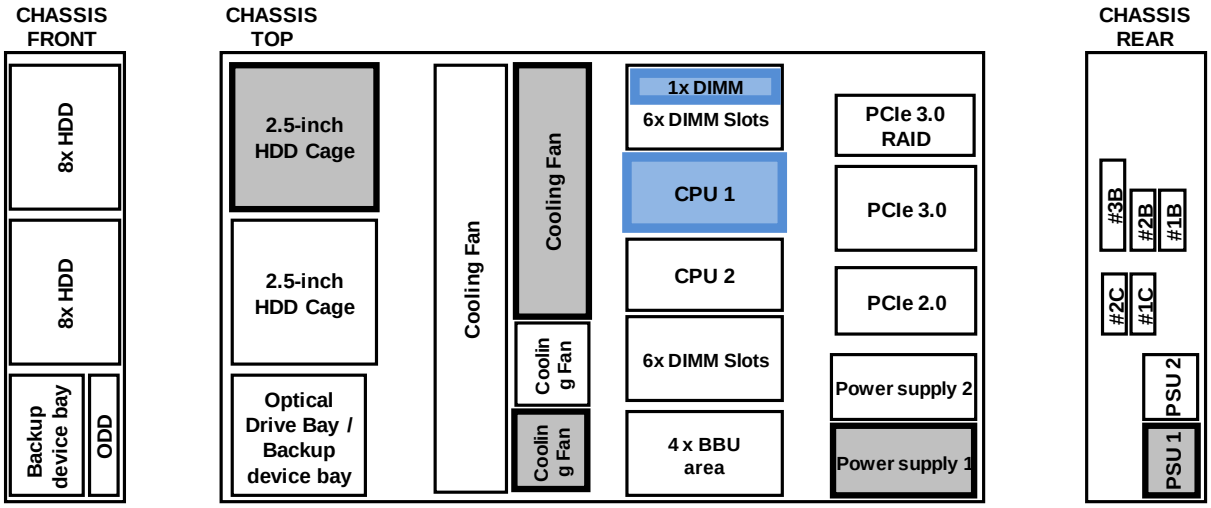
Legend			
A.	PCI Slots (Low-Profile)	**H**	Data LAN Connectors
B.	PCI Slots (Low-Profile) (with Full Height bracket)	**I.**	USB Connectors
C.	PCI Slots (Full Height)	**J.**	UID Button/LED
D.	Power Supply	**K.**	Management LAN Connector
E.	AC Inlet	**L.**	Serial Port Connector
F.	AC Power LED	**M.**	VGA Connector
G.	Additional Power Supply Slot		

Dimensions (mm)



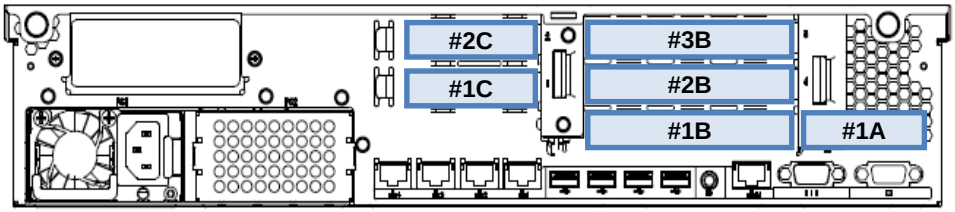
* Without back side parts of slide rail (cable arm cannot be attached)

Configuration Diagram



Legend: Minimum required components Standard components

Expansion Slot



Legend	
#1A	PCIe 3.0 x8, x8 connector, for a dedicated RAID controller
#1B	PCIe 3.0 x4, x8 connector, Low-profile with full-height bracket, up to 197 mm length
#2B	PCIe 3.0 x4, x8 connector, Low-profile with full-height bracket, up to 197 mm length
#3B	PCIe 3.0 x8, x8 connector, Full-height bracket, up to 177 mm length
#1C	PCIe 2.0 x1, x4 connector, Low-profile, up to 177 mm length
#2C	PCIe 2.0 x4, x8 connector, Low-profile, up to 177 mm length

Server Configuration

1 Base Models

Product Name / Description	Part Number
NEC Express5800/R120d-2E Server no processor, no RAM, no HDD, no ODD Including: 8 x 2.5-inch drive cage, 450 Watt power supply, EXPRESSBUILDER DVD	N8100-1950F
NEC Express5800/R120d-2E Server no processor, no RAM, no HDD, no ODD Including: 8 x 2.5-inch drive cage, 800 Watt power supply, EXPRESSBUILDER DVD	N8100-1951F

NOTE:

- The base model must be ordered with a processor kit and a memory kit.

2 Processors and Heat Sink

Available sockets: 2

Category		Product Name / Description	Part Number
Processors **1 Processor Required**		**Xeon E5-2403 Processor Kit** Intel® Xeon ® Processor E5-2403 (1.80 GHz, 4C/4T, 10 MB)	N8101-560F
		Xeon E5-2407 Processor Kit Intel® Xeon ® Processor E5-2407 (2.20 GHz, 4C/4T, 10 MB)	N8101-561F
		Xeon E5-2420 Processor Kit Intel® Xeon ® Processor E5-2420 (1.90 GHz, 6C/12T, 15 MB)	N8101-562F
		Xeon E5-2430 Processor Kit Intel® Xeon ® Processor E5-2430 (2.20 GHz, 6C/12T, 15 MB)	N8101-563F
		Xeon E5-2430L Processor Kit Intel® Xeon ® Processor E5-2430L (2 GHz, 6C/12T, 15 MB)	N8101-564F
		Xeon E5-2450 Processor Kit Intel® Xeon ® Processor E5-2450 (2.10 GHz, 8C/16T, 20 MB)	N8101-565F
		Xeon E5-2470 Processor Kit Intel® Xeon ® Processor E5-2470 (2.30 GHz, 8C/16T, 20 MB)	N8101-567F
Heat Sink	**1st**	**Processor Heat Sink** For 1st Processor	(Standard)
	2nd	**Processor Heat Sink** For 2nd Processor, including cooling fan kit	N8101-575F

NOTE:

- Minimum one processor kit from above must be installed.
- The processors must be the same to configure dual processor system.

3 Memory

3.1 Memory Configuration

Refer to the section in accordance with your memory configuration:

- Independent Channel: Refer to **3.1.1**
- Memory Sparing Configuration: Refer to **3.1.2**
- Memory Mirroring / Memory Lockstep Configuration: Refer to **3.1.3**

Memory Configuration Feature Comparison

See the table below for feature comparisons of memory configurations supported.

	Independent Channel	Memory Sparing	Memory Lockstep	Memory Mirroring
Performance	Best	Better	Better	Good
Data Protection	No	Multiple single bit error protection	No	Multiple single bit and multi bit error protection
Redundancy	No	Partly	No	Fully
Data Correction	ECC, x4 SDDC	ECC, x4 SDDC	ECC, x8 SDDC	ECC, x4 SDDC
Available Memory	Full physical memory	3/4 physical memory	Full physical memory	Half physical memory
Available Memory Channels	3	3	2	2
Notes	-	All DIMMs in the system must be identical.	Paired DIMMs must be identical.	Paired DIMMs must be identical.

3.1.1 Independent Channel Configuration

Available slots: 6 per processor

Category	Product Name / Description	Part Number
Unbuffered DIMM (UDIMM)	**4GB DDR3-1333 UNB Memory Kit** 1x 4GB Unbuffered ECC DIMM, DDR3L-1333(PC3L-10600) **NOTE:** - The x4 SDDC is not supported.	N8102-455F
Registered DIMM (RDIMM)	**2GB DDR3-1600 REG Memory Kit** 1x 2GB Registered ECC DIMM, DDR3L-1600(PC3L-12800) **NOTE:** - The x4 SDDC is not supported.	N8102-488F
	4GB DDR3-1600 REG Memory Kit 1x 4GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-489F
	8GB DDR3-1600 REG Memory Kit 1x 8GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-490F
	16GB DDR3-1600 REG Memory Kit 1x 16GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-491F
	32GB DDR3-1066 REG Memory Kit 1x 32GB Registered ECC DIMM, DDR3L-1066(PC3L-8500)	N8102-492F

NOTE:

- Minimum one memory kit per processor must be installed.
- It is recommended to install memory kits in multiples of three for triple-channel symmetric memory configurations to increase memory transfer speed.
- When two processors are installed, balance the DIMMs across the two processors.
- Mix configurations of UDIMM/RDIMM are not supported

3.1.2 Memory Sparing Configuration

Available slots: 6 per processor

Product Name / Description	Part Number
16GB DDR3-1600 REG Memory Kit 2x 8GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-497
32GB DDR3-1600 REG Memory Kit 2x 16GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-498

NOTE:

- Minimum one memory kit per processor must be installed.
- The configured memories must be identical.
- When two processors are installed, balance the DIMMs across the two processors.
- The logical memory capacity becomes three-fourths of physical capacity.

3.1.3 Memory Mirroring / Memory Lockstep Configuration

Available slots: 4 per processor

Product Name / Description	Part Number
4GB DDR3-1600 REG Memory Kit 2x 2GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-493
8GB DDR3-1600 REG Memory Kit 2x 4GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-494
16GB DDR3-1600 REG Memory Kit 2x 8GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-495
32GB DDR3-1600 REG Memory Kit 2x 16GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-496

NOTE:

- Minimum one memory kit per processor must be installed.
- The logical memory capacity becomes a half of physical capacity on memory mirroring configuration.

Maximum Memory Speed

See the table below for the actual maximum memory transfer speed in Independent Channel / Memory Sparing Configuration.

DDR3 memory speed depends on the type of DIMMs, the native memory bus speed of the memory controller and memory configuration. All memory buses operate at the clock frequency of the DIMM with the lowest frequency.

Processor Type	Populated DIMMs	# of DIMMs per processor	Memory Power Setting	DIMM Speed
E5-2403	UDIMM: 4GB RDIMM: 2 GB, 4 GB, 8 GB,16 GB	-	-	1066 MHz
E5-2407	RDIMM: 32 GB	-	-	800 MHz
E5-2420	UDIMM: 4GB	Up to 3 DIMMs	-	1333 MHz
E5-2430		4 or more DIMMs	-	1066 MHz
E5-2430L	RDIMM: 2 GB, 4 GB, 8 GB,16 GB	-	-	1333 MHz
	RDIMM: 32 GB	-	-	800 MHz
E5-2450	UDIMM: 4GB	Up to 3 DIMMs	-	1333 MHz
E5-2470		4 or more DIMMs	-	1066 MHz
	RDIMM: 2 GB, 4 GB, 8 GB,16 GB	-	Low (1.35V)	1333 MHz
		-	Normal (1.5V)	1600 MHz
	RDIMM: 32 GB	-	-	800 MHz

Maximum Available Memory

See the table below for the maximum memory size that you can actually use on your system.

The maximum available memory is less than the maximum physical memory supported by your system because some chipsets require PCI resource space of about 750MB. PCI resource requirements vary depending on the type and the number of PCI cards you are using.

Maximum Memory Size Supported by Operating Systems		Maximum Available Memory
Microsoft Windows Server 2003 R2, Standard Edition Microsoft Windows Server 2008 Standard	**4 GB**	**4 GB (HW-DEP enabled)** **App. 2 GB (HW-DEP disabled)**
Microsoft Windows Server 2003 R2, Standard x64 Edition Microsoft Windows Server 2008 Standard (x64) Microsoft Windows Server 2008 R2 Standard	**32 GB**	**32 GB**
Microsoft Windows Server 2003 R2, Enterprise Edition Microsoft Windows Server 2008 Enterprise	**64 GB**	**64 GB**
Microsoft Windows Server 2003 R2, Enterprise x64 Edition	**1 TB**	**384 GB**
Microsoft Windows Server 2008 Enterprise (x64) Microsoft Windows Server 2008 R2 Enterprise	**2 TB**	**384 GB**
Microsoft Windows Server 2012 Standard Microsoft Windows Server 2012 Datacenter	**4 TB**	**384 GB**
Red Hat Enterprise Linux 5 Red Hat Enterprise Linux 6	**16 GB**	**16 GB**
Red Hat Enterprise Linux 5 (EM64T)	**1 TB**	**384 GB**
Red Hat Enterprise Linux 6 (x86_64)	**2 TB**	**384 GB**
VMware ESX 4.1[1]	**256 GB or 1 TB**	**256 GB or 384 GB**
VMware ESXi 5.0 / 5.1[2]	**2 TB**	**384 GB**

[1] Up to 255 GB of the main memory is available to each virtual machine

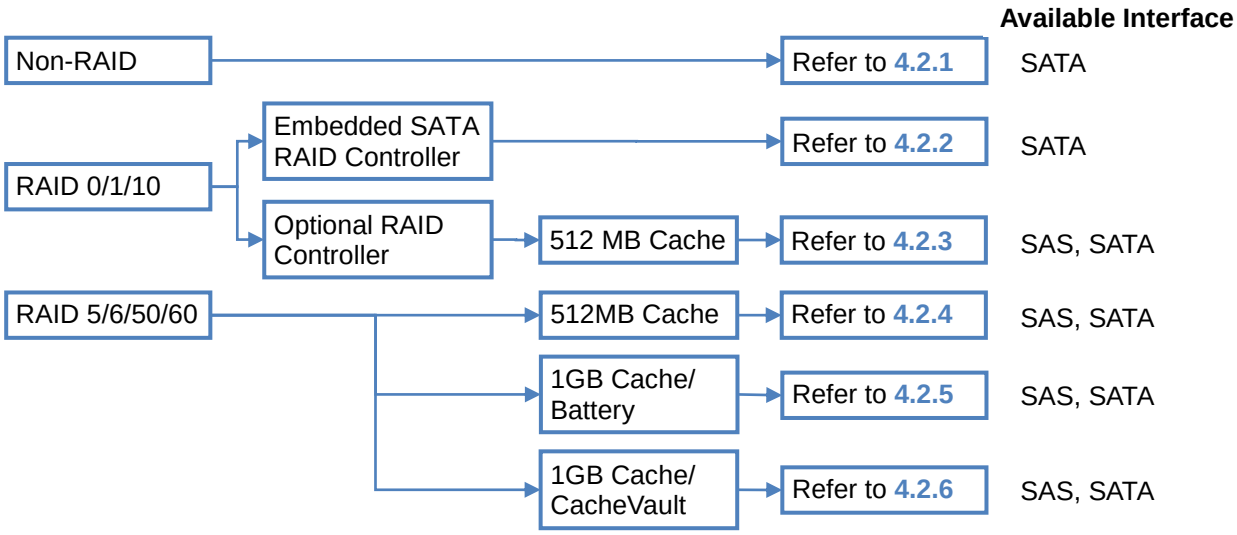
[2] Up to 1 TB of the main memory is available to each virtual machine.

4 Internal Hard Disk Drives

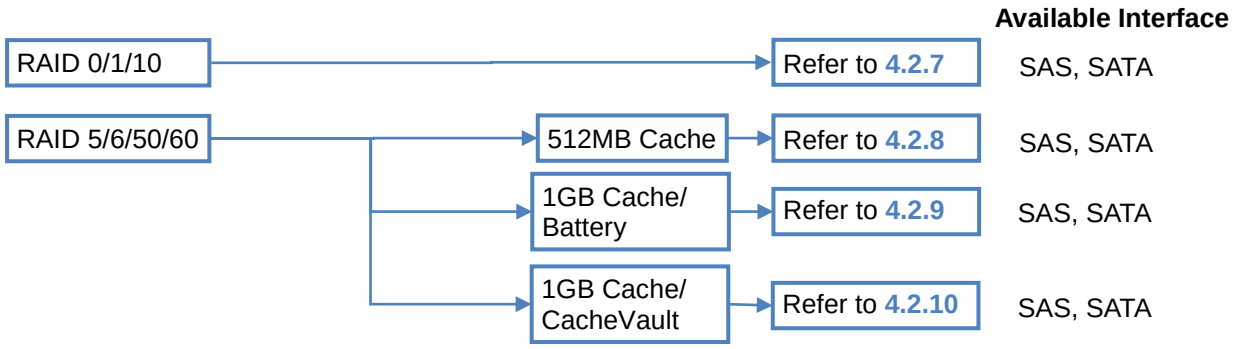
4.1 RAID Configuration

Refer to the section in accordance with your disk form factor and RAID configuration.

Up to eight 2.5-inch Drives



Up to sixteen 2.5-inch Drives



NOTE:

- Up to four hard drives can be installed in the Embedded SATA configuration.
- Hot plug insertion/removal are not supported in the Embedded SATA configuration.
- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in a drive cage.
- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- It is recommended to set RAID array configuration drives less than eight in order to minimize the risk of becoming multiple hard drives failure.
- For optional RAID controller driver to install Windows Server 2003 R2, download from the NEC website at:
  http://www.nec.com/en/global/prod/express/download/index.html

4.2 Internal Drive Configuration

4.2.1 Up to four Drives with Embedded SATA Controller

Category		Product Name / Description	Part Number
Storage Controller		**Embedded SATA Controller** 2x 6Gb/s SATA, 2x 3Gb/s SATA	(Standard)
Cable		**Internal SATA Cable** 1 x mini-SAS to 1 x mini-SAS	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch Hot-plug hard drive bays	(Standard)
Drive **4 slots available**	**SATA HDD**	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358

NOTE:

- Hot plug insertion/removal is not supported with the Embedded SATA non-RAID controller.
- The maximum transfer speed for Slot 2 and Slot 3 is 3 Gb/s.

4.2.2 Up to four Drives with Embedded SATA RAID 0/1 Controller

Category		Product Name / Description	Part Number
Storage Controller		**Embedded SATA Controller** 2x 6Gb/s SATA, 2x 3Gb/s SATA, RAID 0/1/10 capable	(Standard)
Cable		**Internal SATA Cable** 1 x mini-SAS to 1 x mini-SAS	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch Hot-plug hard drive bays	(Standard)
Drive **4 slots available**	**SATA HDD**	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358

NOTE:

- Embedded SATA RAID controller is supported only on Windows operating systems. An optional RAID controller is required to configure RAID array for other operating systems.
- The maximum transfer speed for Slot 2 and Slot 3 is 3 Gb/s.

4.2.3 Up to eight Drives with RAID 0/1 Controller with 512 MB Cache

Category		Product Name / Description	Part Number
Storage Controller Required		**RAID Controller (512MB, RAID 0/1)** LSI MegaRAID SAS 9267-8i RAID 0/1/10, 512 MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-149
RAID BBU Recommended		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Drive 8 slots available	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1x 100 GB SAS SSD, SLC, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, SCL, 2.5-inch, 6Gb/s	N8150-710
		200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-711
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-712

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in a Drive Cage.

4.2.4 Up to eight Drives with RAID 5/6 Controller with 512 MB Cache

Category		Product Name / Description	Part Number
Storage Controller Required		**RAID Controller (512MB, RAID 0/1/5/6)** LSI MegaRAID SAS 9267-8i RAID0/1/5/6/10/50/60, 512MB cache, Int.8, PCIe 2.0 x8 , SAS 6Gb/s, SATA 6Gb/s	N8103-150
RAID BBU Recommended		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Drive 8 slots available	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1x 100 GB SAS SSD, SLC, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, SCL, 2.5-inch, 6Gb/s	N8150-710
		200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-711
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-712

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in a Drive Cage.

4.2.5 Up to eight Drives with RAID 5/6 Controller with 1 GB Cache/Battery

Category		Product Name / Description	Part Number
Storage Controller **Required**		**RAID Controller (512MB, RAID0/1/5/6)** LSI MegaRAID SAS 9267-8i RAID 0/1/5/6/10/50/60, 1 GB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-151
RAID BBU **Recommended**		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
SSD Caching **Recommended**		**MegaRAID CacheCade** for LSI MegaRAID SAS **NOTE:** - SSD used for cache is required - The SSD capacity which can be used as read cache is up to 512 GB.	N8103-156
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Drive **8 slots available**	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1x 100 GB SAS SSD, SLC, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, SCL, 2.5-inch, 6Gb/s	N8150-710
		200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-711
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-712

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in a Drive Cage.

4.2.6 Up to eight Drives with RAID 5/6 Controller with 1 GB Cache/CacheVault

Category		Product Name / Description	Part Number
Storage Controller **Required**		**RAID Controller (1GB, RAID 0/1/5/6)** LSI MegaRAID SAS 9265CV-8i (with CV) RAID0/1/5/6/10/50/60, 1GB Cache, Int. 8ports, PCIe 3.0(x8), 6Gb/s, flash cache protection modules included	N8103-152
SSD Caching **Recommended**		**MegaRAID CacheCade** for LSI MegaRAID SAS **NOTE:** - SSD used for cache is required - The SSD capacity which can be used as read cache is up to 512 GB.	N8103-156
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Drive **8 slots available**	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1x 100 GB SAS SSD, SLC, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, SCL, 2.5-inch, 6Gb/s	N8150-710
		200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-711
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-712

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in a Drive
- Cage. For VMware ESXi 5.x installation, to download the CIM provider is required.
- For VMware ESXi 5.x systems, monitoring the status of a RAID array with NEC ESMPRO is not supported.

4.2.7 Up to sixteen Drives with RAID 0/1 Controller with 512 MB Cache

Category		Product Name / Description	Part Number
Storage Controller **Required**		**RAID Controller (512MB, RAID 0/1)** LSI MegaRAID SAS 9267-8i RAID 0/1/10, 512MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-149
RAID BBU **Recommended**		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Optional Drive Cage **Required**		**2.5-Inch Drive Cage** 8 x 2.5-inch hot plug drive bays Including SAS expander card and 4 x SAS cable	N8154-46
Drive **16 slots available**	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1x 100 GB SAS SSD, SLC, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, SCL, 2.5-inch, 6Gb/s	N8150-710
		200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-711
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-712

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in a Drive Cage.

4.2.8 Up to sixteen Drives with RAID 5/6 Controller with 512 MB Cache

Category		Product Name / Description	Part Number
Storage Controller Required		**RAID Controller (512MB, RAID 0/1/5/6)** LSI MegaRAID SAS 9267-8i RAID0/1/5/6/10/50/60, 512MB cache, Int.8, PCIe 2.0 x8 , SAS 6Gb/s, SATA 6Gb/s	N8103-150
RAID BBU Recommended		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Optional Drive Cage Required		**2.5-Inch Drive Cage** 8 x 2.5-inch hot plug drive bays Including SAS expander card and 4 x SAS cable	N8154-46
Drive 16 slots available	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1x 100 GB SAS SSD, SLC, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, SCL, 2.5-inch, 6Gb/s	N8150-710
		200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-711
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-712

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in a Drive Cage.

4.2.9 Up to sixteen Drives with RAID 5/6 Controller with 1 GB Cache/Battery

Category		Product Name / Description	Part Number
Storage Controller **Required**		**RAID Controller (512MB, RAID0/1/5/6)** LSI MegaRAID SAS 9267-8i RAID 0/1/5/6/10/50/60, 1 GB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-151
RAID BBU **Recommended**		**RAID Battery Backup Unit** for LSI MegaRAID SAS 9267-8i	N8103-153
SSD Caching **Recommended**		**MegaRAID CacheCade** for LSI MegaRAID SAS **NOTE:** - SSD used for cache is required - The SSD capacity which can be used as read cache is up to 512 GB.	N8103-156
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Optional Drive Cage **Required**		**2.5-Inch Drive Cage** 8 x 2.5-inch hot plug drive bays Including SAS expander card and 4 x SAS cable	N8154-46
Drive **16 slots available**	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1x 100 GB SAS SSD, SLC, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, SCL, 2.5-inch, 6Gb/s	N8150-710
		200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-711
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-712

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in a Drive Cage.

4.2.10 Up to sixteen Drives with RAID 5/6 Controller with 1 GB Cache/CacheVault

Category		Product Name / Description	Part Number
Storage Controller **Required**		**RAID Controller (1GB, RAID 0/1/5/6)** LSI MegaRAID SAS 9265CV-8i (with CV) RAID0/1/5/6/10/50/60, 1GB Cache, Int. 8ports, PCIe 3.0(x8), 6Gb/s, flash cache protection modules included	N8103-152
SSD Caching **Recommended**		**MegaRAID CacheCade** for LSI MegaRAID SAS **NOTE:** - SSD used for cache is required - The SSD capacity which can be used as read cache is up to 512 GB.	N8103-156
Cable		**Internal SAS/SATA Cable** 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
Drive Cage		**2.5-inch Drive Cage** 8 x 2.5-inch hot plug drive bays	(Standard)
Optional Drive Cage **Required**		**2.5-Inch Drive Cage** 8 x 2.5-inch hot plug drive bays Including SAS expander card and 4 x SAS cable	N8154-46
Drive **16 slots available**	**SAS HDD**	**300GB 10K Hot Plug 2.5-inch SAS HDD** 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB 15K Hot Plug 2.5-inch SAS HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	**250GB 7.2K Hot Plug 2.5-inch SATA HDD** 1 x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1 x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	**100GB Hot Plug 2.5-inch SAS SSD** 1x 100 GB SAS SSD, SLC, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, SCL, 2.5-inch, 6Gb/s	N8150-710
		200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-711
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s	N8150-712

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in a Drive Cage.
- For VMware ESXi 5.x installation, to download the CIM provider is required.
- For VMware ESXi 5.x systems, monitoring the status of a RAID array with NEC ESMPRO is not supported.

5 Optical Drive

Category	Product Name / Description	Part Number
Internal 1 slot available	**Internal Slim DVD-ROM drive** Slim DVD-ROM drive	N8151-100
	Internal DVD Super Multi Drive Slim DVD Super Multi drive, not including writing software	N8151-104F
External	**External DVD-ROM drive** Slim DVD-ROM drive, Bus powered, 0.8 A required	N8160-85

NOTE:

- Up to 1 optical drive can be connected.

6 Internal Tape / RDX Drives

6.1 Tape / RDX Drive Selection

Refer to the section in accordance with your type of tape drives:

- DAT: Refer to 6.2.1
- RDX: Refer to 6.2.2

NOTE:

- Tape devices cannot be directly connected to VMware systems. For VMware systems, it is recommended to connect and configure an additional backup server via network.

6.2 Tape / RDX Configuration

6.2.1 DAT

Category	Product Name / Description	Part Number
Controller	**Internal USB Controller** 1 x USB port	(Standard)
Cable	**Internal USB cable** 1 x Internal USB to 1 x USB device	(Standard)
Drive 1 bay available	**Internal DAT (USB)** DDS3 / DDS4 / DAT72, Native capacity 36 GB **NOTE**: DDS1 / DDS2 format are not supported	N8151-69A
	Internal DAT (USB) DDS4 / DAT72 / DAT160, Native capacity 80 GB **NOTE**: DDS1 / DDS2 / DDS3 format are not supported	N8151-78A

6.2.2 RDX

Category	Product Name / Description	Part Number
Controller	**Internal USB Controller** 1 x USB port	(Standard)
Cable	**Internal USB cable** 1 x Internal USB to 1 x USB device	K410-264(00)
Drive 1 bay available	**Internal RDX (USB)**	N8151-105

7 PCI Card

Please refer to **Supported PCI Cards and Installable Slots** with regard to the position of PCI slot which can mount PCI card supported.

7.1 Network Interface Controller

Category		Product Name / Description	Part Number
Adapter	**1GbE**	**1000BASE-T Adapter** Broadcom ® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x1	N8104-138
		Dual Port 1000BASE-T Adapter Broadcom ® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x1	N8104-132
		Quad Port 1000BASE-T Adapter Broadcom ® BCM5719 Gigabit Ethernet Controller PCIe 2.0 x4 **NOTE:** - Network cables with RJ-45 plug covers cannot be used. - Jumbo frames are supported.on Windows Server 2008 R2 and Redhat Enterprise Linux operating systems.	N8104-133
	10GbE	**10GBASE Adapter (SFP+/2ch)** Broadcom NetXtreme II BCM957711 10G SFP+ Dual Port Network Interface Card PCIe 2.0 x8 **NOTE**: - N8104-129 SFP+ Module is required to connect with an optical cable. - Up to 2 SFP+ Modules can be installed. - Up to 1 adapter is supported when RHEL6 is installed. - Supports up to 2 adapters covering 10Gb Converged Network Adapter and 10Gb Network Adapter.	N8104-128
		Dual Port 10Gb Converged Network Adapter BROCADE 1020 Dual Port 10Gbps Converged Network Adapter PCIe 2.0 x8, 2 x SFP modules **NOTE**: - Supports up to two adapters of10Gb Converged Network Adapter and 10Gb Network Adapter.	N8104-131
SPF+ Module		**SFP+ Module (10G-SR)** 1 x SFP+ Module for N8104-128	N8104-129

NIC Teaming feature – NIC Teaming and bonding features

See the table below for supported network interfaces and OS combinations.

Windows supports BASP (Broadcom Advanced Server Program) teaming while Linux supports teaming with bonding function supported by OS.

Network Interface	Team	Operating Systems
1GbE NIC Embedded 1GbE NIC and N8104-138/-132/-133	Up to four teams per one system Up to four ports per one team	Windows Server 2003 R2 Windows Server 2008 Windows Server 2008 R2 Red Hat Enterprise Linux
10GbE NIC N8104-128	Up to two teams per one system Up to two ports per one team	Windows Server 2008 Windows Server 2008 R2 Red Hat Enterprise Linux

NOTE:

- Teaming feature is not supported on iSCSI interfaces.
- The network interfaces for teaming must be the same.

- When 10GbE and 1GbE NIC teams are mixed, the teams must be up to four per one system.

Using iSCSI

See the table below for supported network interfaces and OS combinations.

Categor	Network Interface	Operating Systems
1GbE	Embedded 1GbE NIC	Windows Server 2008 R2, Windows Server 2012, Red Hat Linux, VMware
	N8104-138	Windows Server 2008 R2, Windows Server 2012, Red Hat Linux, VMware
	N8104-132	Windows Server 2008 R2, Windows Server 2012, Red Hat Linux, VMware
	N8104-133	Windows Server 2008 R2, Windows Server 2012, Red Hat Linux, VMware
10GbE	N8104-128	Windows Server 2008, Windows Server 2008 R2, Red Hat Linux, VMware

NOTE:

- NIC Teaming feature is not supported on iSCSI interfaces.

7.2 External Storage Controller

7.2.1 RAID Controller

Category	Product Name / Description	Part Number
Controller	**RAID Controller (1GB, RAID0/1/5/6)** LSI MegaRAID SAS 9285-8e RAID0/1/5/6/10/50/60, 1GB, Ext. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s	N8103-160
RAID BBU	**RAID Battery Backup Unit** for LSI MegaRAID SAS 9285-8e	N8103-162

NOTE:

- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- It is recommended to set RAID array configuration drives less than eight in order to minimize the risk of becoming multiple hard drives failure.

7.2.2 Fibre Channel / SAS Controller

Category	Product Name / Description	Part Number
Fibre Channel	**Fibre Channel Controller (1ch)** Emulex LightPulse LPe1250-F8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0 x8	N8190-153
	Fibre Channel Controller (2ch) Emulex LightPulse LPe12002-M8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0 x8	N8190-154
SAS	**SAS Controller** LSI SAS9212-4i4 Host Bus Adapter 6Gb/s SAS, Int. 4 / Ext. 4, 7-pin SATA / SFF-8088, PCIe 2.0 x8	N8103-142

7.3 Serial Port Adapter

Product Name / Description	Part Number
Serial Port Adapter Serial port fixed to PCI bracket	N8117-01A

NOTE:

- Up to one Serial Port Adapter can be installed.

8 Other Add-in Components

8.1 Redundant Power Supply Module

Product Name / Description	Part Number
450W Hot Plug Power Supply 1 x 450 Watt 80 PLUS® Platinum Power Supply	N8181-86F
800W Hot Plug Power Supply 1 x 800 Watt 80 PLUS® Platinum Power Supply	N8181-87F

NOTE:

- The power units must be the same to configure redundancy.
- Use the NEC Power Supply Selector to select appropriate size for power units. For details, please visit the NEC website at:
  http://www.nec.com/en/global/prod/express/collateral/tools/PowerSelector_G01.xls

8.2 Redundant Fan Kit

Product Name / Description	Part Number
Redundant Fan Kit 5 hot plug redundant cooling fans for R120d-2E	N8181-99

8.3 Trusted Platform Module Kit

Product Name / Description	Part Number
Trusted Platform Module Kit TPM 1.2 module	N8115-11

NOTE:

- The kit is not available in China.
- The kit is not removable after attachment.
- "TPM Support" in BIOS setup menu must be activated prior to use of this kit.
- To use Windows BitLocker drive encryption, be sure to keep the "recovery password" of BitLocker function. The recovery password is required to restore data for hardware replacement during a system error.

8.4 Internal Flash Memory

Product Name / Description	Part Number
Internal Flash Memory Internal flash memory to enable software and tools in the EXPRESSBUILDER DVD without DVD media **NOTE:** Before use, software and tools must be copied from the EXPRESSBUILDER DVD to the flash memory. The following operations can be performed with the flash memory: - Installation of Windows server with express setup - Installation of Starter Pack—the package of NEC qualified drivers and system setting tools - Installation of NEC ESMPRO Agent and Universal RAID Utility - Performance of the Test and Diagnosis Tool	N8115-10

8.5 Flash FDD

Choose the Flash FDD if you need to prepare an alternative device for a floppy drive.

Product Name / Description	Part Number
Flash FDD USB flash emulating USB floppy disk, Native capacity 1.44 MB	N8160-86

NOTE:

- Up to one drive can be connected.

8.6 Front Bezel

Product Name / Description	Part Number
Front Bezel Front bezel for R120d-2E	N8146-30F

9 Add-on Components

9.1 17-inch LCD Console Drawer

Category		Product Name / Description	Part Number
Drawer w/ KVM	**Drawer**	**17-inch LCD Console Drawer (8port)** 17-inch LCD, US 83-keys Keyboard, Optical mouse, 8 port KVM switch, 1U height	N8143-77F
	Cable	**Switch Unit Connection Cable Set (USB, 1.8m)** 1.8 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(1A)
		Switch Unit Connection Cable Set (USB, 3m) 3 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(03)
		Switch Unit Connection Cable Set (USB, 5m) 5 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(05)
Drawer w/o KVM	**Drawer**	**17inch LCD Console Unit 1U** 17-inch LCD, US 83-keys Keyboard, Optical mouse, 1U height, 4-pin USB B to 4-pin USB A cable 2 m, PS/2 Y-splitter cable 2m, 15-pin mini D-sub VGA cable 2 m	N8143-76F
		17inch LCD Console Drawer (1port) 17-inch LCD, US 103-keys Keyboard with 10-key, Touch pad with 3-button, 1U height, 4-pin USB B to 4-pin USB A cable 1.8 m, Two PS/2 cable 1.8 m, 15-pin mini D-sub VGA cable 1.8 m	N8143-84F
	Keypad	**Keyboard Unit (JP)** JP 108-keys Keyboard with 10-key for N8143-84F 17inch LCD Console Drawer (1port)	N8143-85
		Keyboard Unit (UK) UK 104-keys Keyboard with 10-key, for N8143-84F 17inch LCD Console Drawer (1port)	N8143-87

9.2 KVM Switch

Category		Product Name / Description	Part Number
KVM Switch		**Server Switch Unit (8 server)** 1U USB 8 port KVM switch	N8191-12F
Cable	**KVM**	**Switch Unit Connection Cable Set (USB,1.8m)** 1.8 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(1A)
		Switch Unit Connection Cable Set (USB,3m) 3 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(03)
		Switch Unit Connection Cable Set (USB,3m) 5 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(05)
	Cascading	**Switch Unit Connection Cable 1.8 m** 1.8 m, 1 x 15-pin mini D-sub - 1x 15-pin mini D-Sub / 2x PS/2	K410-119(1A)

9.3 Cable Management Arm

Product Name / Description	Part Number
Cable Management Arm 2U Kit For 2U Rack server	N8143-78

NOTE:

- The Cable Management Arm cannot be attached when the back parts of the slide-rail are removed.

9.4 Server Management License

The server integrates the EXPRESSSCOPE Engine 3 as standard. Refer to **Server Management** for the standard management features. For more extensive remote KVM and remote media features, choose the following kit.

Product Name / Description	Part Number
Remote KVM and Media License Kit License for one server. Remote KVM and remote media are enabled regardless of OS status. Remote KVM: - Displays a graphics console on the web browser of the remote terminal (PC/server). - Controls keyboard and mouse via the remote terminals' web browser Remote media: - Enables the user to use the CD / DVD / FD / Flash memory of the remote terminals (PC/server) as if accessing the local drives. **NOTE:** Remote KVM and remote media features are not available for virtual machines.	N8115-04

9.5 Medium and Cartridge

Category	Product Name	Drive supported	Part Number
DAT	**DAT72(36GB) Medium 5 pack**	N8151-69A N8151-78A	N8152-08
	DAT160(80GB) Medium 5 pack	N8151-78A	N8152-14
	DAT160 WORM (80GB) Medium	N8151-78A	N8152-21
RDX	**RDX Cartridge (320GB)**	N8151-105	N8152-26
	RDX Cartridge (500GB)	N8151-105	N8152-27
	RDX Cartridge (1TB)	N8151-105	N8152-33

References

Server Management

The EXPRESSSCOPE Engine 3, integrated into the server, provides superior remote control and system management features listed in the table below.

		Standard	With Remote KVM and Media License kit
Hardware monitoring	Temperature/voltage/power/ fan /degeneration (memory/hard drive)	✓	✓
	Hardware configuration information collection	✓	✓
	Hardware event log collection	✓	✓
Boot monitoring	BIOS/POST stall, Booting, OS stall, shutdown	✓[1]	✓[1]
Alerting	HW error, Boot error , and OS panic (by SNMP, E-Mail)	✓	✓
Remote KVM (via LAN)	POST/BIOS setup, ROM utility	✓[2]	✓
	Panic screen, Boot screen	✓[2, 3, 4]	✓
	CUI-based screen (OS console)	✓[2, 4]	✓
	GUI-based screen (OS console)	-	✓
Remote control (via LAN)	Remote reset/power on-off/ dump	✓	✓
	Remote power capping	✓	✓
	BIOS/BMC FW update	✓	✓
	Remote BIOS setup(partial configuration only)	✓	✓
	OS shutdown	✓[1]	✓[1]
	Remote media (CD/DVD/FD/USB)	-	✓
	CLP (Command Line Protocol) (DMTF compliant)	✓	✓
	Remote control via Web browser (multi user login at the same time)	✓	✓
	Scheduling (without UPS)	✓[1]	✓[1]
Maintenance	EXPRESSSCOPE® Profile key (Backup/restore BIOS/BMC setup information)	✓	✓
Others	Set automatic IP address via DNS/DHCP	✓	✓
	LDAP/Active Directory verification/user control	✓	✓
	Clock synchronization of main unit and the RTC	✓	✓
	Access log collection	✓	✓
Industry standard	IPMI	2.0	2.0

[1] The feature is not supported on VMware ESXi systems.

[2] The optional serial port is not available for the feature.

[3] Monitoring boot screens is not supported on VMware systems.

[4] In VMware systems, only the direct console user interface is supported.

OS Support Matrix for PCI Cards and Embedded Controller

Part number	Product Name	WS 2012	WS 2008R2	WS 2008	WS 2008 x64	WS 2003R2	WS 2003R2 x64	RHEL 6	RHEL 6 x64	RHEL 5	RHEL 5 x64	ESXi 5.1	ESXi 5.0	ESX 4.1
-	Embedded SATA non-RAID Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
-	Embedded SATA RAID Controller	-	✓	✓	✓	✓	✓	-	-	-	-	-	-	-
-	Embedded 1GbE NIC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-149	RAID Controller (512 MB, RAID 0/1)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-150	RAID Controller (512 MB, RAID 0/1/5/6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-151	RAID Controller (1 GB,RAID 0/1/5/6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-152	RAID Controller (1 GB,RAID 0/1/5/6)	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓
N8103-160	RAID Controller (1 GB,RAID 0/1/5/6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-142	SAS Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
N8190-153	Fibre Channel Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8190-154	Fibre Channel Controller (2ch)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-138	1000BASE-T adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-132	Dual Port 1000BASE-T Adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-133	Quad Port 1000BASE-T Adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-128	10GBASE adapter (SFP+/2ch)	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓
N8104-131	Dual Port 10Gb Converged Network Adapter	✓	✓	✓	✓	-	-	✓	✓	✓	✓	-	-	-

Supported PCI Cards and Installable Slots

		Slots						
Part Number	Product Name	#1A	#1B	#2B	#3B	#1C	#2C	Note
N8103-149	RAID Controller (512 MB, RAID 0/1)	✓	-	-	-	-	-	
N8103-150	RAID Controller (512 MB, RAID 0/1/5/6)	✓	-	-	-	-	-	
N8103-151	RAID Controller (1 GB,RAID 0/1/5/6)	✓	-	-	-	-	-	
N8103-152	RAID Controller (1 GB,RAID 0/1/5/6)	✓	-	-	-	-	-	
N8103-160	RAID Controller (1 GB,RAID 0/1/5/6)	-	✓	✓	✓	-	✓	**Max. 2**
N8103-142	SAS Controller	-	✓	✓	✓	-	✓	**Max. 3**
N8190-153	Fibre Channel Controller	-	✓	✓	✓	-	✓	
N8190-154	Fibre Channel Controller (2ch)	-	✓	✓	✓	-	✓	
N8104-138	1000BASE-T adapter	-	✓	✓	✓	✓	✓	
N8104-132	Dual Port 1000BASE-T Adapter	-	✓	✓	✓	✓	✓	
N8104-133	Quad Port 1000BASE-T Adapter	-	✓	✓	✓	-	✓	
N8104-128	10GBASE adapter (SFP+/2ch)	-	✓	✓	✓	-	✓	
N8104-131	Dual Port 10Gb Converged Network Adapter	-	✓	✓	✓	-	✓	**Max. 2**
N8117-01A	Serial Port Adapter	-	✓	✓	✓	✓	✓	

Maximum power consumption

See the table below for the maximum power consumption based on type of power supplies installed. The power consumption was measured in 40 degree Celsius (104 degree Fahrenheit) environment.

Processors		E5-2403	E5-2407	E5-2420	E5-2430	E5-2430L	E5-2450	E5-2470
200 VAC input	800 Watt PSU	614 VA /600 Watt	638 VA / 627 Watt	687 VA / 675 Watt	690 VA / 678 Watt	670 VA / 658 Watt	775 VA / 762 Watt	775 VA / 763 Watt
	450 Watt PSU	361 VA / 355 Watt	385 VA / 378 Watt	467 VA / 459 Watt	470 VA / 462 Watt	449 VA / 441 Watt	474 VA / 469 Watt	475 VA / 470 Watt
100 VAC input	800 Watt PSU	620 VA / 610 Watt	644 VA / 633 Watt	693 VA / 681 Watt	696 VA / 684 Watt	676 VA / 664 Watt	782 VA / 769 Watt	782 VA / 770 Watt
	450 Watt PSU	364 VA / 358 Watt	388 VA / 381 Watt	471 VA / 463 Watt	474 VA / 466 Watt	453 VA / 445 Watt	478 VA / 473 Watt	479 VA / 474 Watt

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For hard drive capacity measurements, 1 GB = 1 billion bytes. Actual formatted capacity is less.

Revision History

Revision	Date	Description
4.0	December 21, 2012	**Part number changed:** Internal DAT (USB) / N8151-69A Internal DAT (USB) / N8151-78A **Others:** Add Windows Server 2012 to the list of operating system supported Support N8103-152 RAID Controller on VMware ESXi 5.x systems Support 10GbE NIC teaming with two or more 10GbE NIC cards. Update OS support matrix
3.0	October 31, 2012	**New products added:** RAID Controller (1GB, RAID 0/1/5/6) / N8103-152 200GB SSD / N8150-711 400GB SSD / N8150-712 **Discontinued products removed:** 100GB SSD / N8150-707 SAS Controller / N8103-104A **Other:** Add VMWare ESX 5.1 to the list of operating system supported Support bonding feature on Linux operating system using 10GbE NIC Update Regulatory list Update OS support matrix
2.0	August 3, 2012	New products added: Internal RDX / N8151-105 Internal USB Cable / K410-264(00) 17-inch LCD Console Drawer (1port) / N8143-84F Keyboard Unit (JP) / N8143-85 Keyboard Unit (UK) / N8143-87 Switch Unit Connection Cable 1.8 m / K410-119(1A) Discontinued products removed: Internal RDX / N8151-86 Other: Add description for expansion slots Update maximum memory speed table Support jumbo frames in quad-channel 1GbE NIC Add description for using iSCSI Add OS support information for embedded controllers into support matrix table Add maximum power consumption table Remove 2.5-inch 10Krpm SATA drives
1.0	May 18, 2012	Initial release